

Things to Know, Understand, and Do For Chapter 6: Thermochemistry

By the end of Chapter 6, you should

know how to...
1. Describe various forms of energy and the nature of heat and thermal energy transfer
2. Convert between the common energy unit (Joule) and convert between the Joule and other energy units.
3. Recognize and use the language of thermodynamics: state functions the system, the surroundings, universe; exothermic and endothermic reactions.
4. Use specific heat capacity in calculations of heat transfer and temperature change ($q = mC\Delta T$)
5. Understand sign conventions in thermodynamics
6. Recognize state functions whose values are determined only by the state of the system, not the pathway taken to reach this state
7. Describe how to measure heat transfer in a chemical reaction using calorimetry (constant pressure and constant volume)
8. Apply Hess' Law to calculate $\Delta H_{\text{reaction}}$
9. Know how to draw and interpret Reaction Coordinate Diagrams
11. Use standard heat of formation (ΔH_f°) to calculate enthalpy change for a reaction, $\Delta H_{\text{rxn}}^\circ$
12. Use stoichiometric principles to solve heat problems: molar heat of reaction
understand...
1. The basis of the First Law of Thermodynamics (LCE)
2. That when heat is transferred at constant pressure, the heat transfer is the enthalpy change, ΔH .
3. That standard heat of formation (ΔH_f) is for the reaction that forms 1 mole of product from elements in their standard states (and that the coefficients of the product is always 1 and non-whole number coefficients of reactants are allowed)

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Also read Sec 6.5 and 6.6 "Sources of Fuel" I am not going to spend class time on this.